Supporting Information

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Table S1. Magnetic field properties directly under power lines (<5 m from outer conductors) trending in various compass directions

Power line direction	Horizontal intensity (μT) <H_1; H_2>	Vertical intensity (μT) $V_0 = V_1 = V_2$	Total intensity (μT) <T_1; T_2>	Inclination (°) <I_1; I_2>	Azimuth (°) <Az_1; Az_2>
N-S (0°)	<26.63; 26.63>	45	<52.29; 52.29>	<59.4°; 59.4°>	<325.7°; 34.3°>
E-W (90°)	<7; 37>	45	<45.54; 58.25>	<81.2°; 50.6°>	0°
NW-SE (135°)	<15.57; 34.28>	45	<47.61; 56.57>	<70.9°; 52.7°>	<317.1°; 18.3°>
NE-SW (45°)	<34.28; 15.57>	45	<56.57; 47.61>	<52.7°; 70.9°>	<341.7°; 43°>

H_1, H_2, V_1, V_2, T_1, and T_2 are vectors of the fields resulting from summation of the AMF and the EMF; the actual field oscillates between H_1 and H_2, V_1 and V_2, and T_1 and T_2, respectively, with a frequency of 50 Hz. All calculations were made for the AMF vector (B_{AF}) = 15 μT.

Table S2. Body alignment of cattle grazing directly under power lines (lateral distance from outer conductors 0–5 m)

Power line direction	Mean axis μ	Length of mean vector r	Rayleigh test Z	Rayleigh test P	n
	Alignment relative to magnetic North (mN = 0°)				
N-S (0 ± 20°)	13.1°/193.1°*	0.33	2.85	0.056	25 (146)
E-W (90 ± 20°)	85.4°/265.4°*	0.52	6.87	0.0007	25 (98)
NW-SE (135 ± 20°)	115.4°/295.4°*	0.21	1.14	0.322	25 (123)
NE-SW (45 ± 20°)	55.7°/235.7°*	0.29	2.11	0.121	25 (83)
	Alignment relative to the power line direction (PL direction = 0°)				
N-S (0 ± 20°)	12.9°/192.9°†	0.32	2.51	0.08	25 (146)
E-W (90 ± 20°)	170.0°/350.0°†	0.57	8.23	<0.001	25 (98)
NW-SE (135 ± 20°)	171.5°/351.5°†	0.10	0.25	0.785	25 (123)
NE-SW (45 ± 20°)	177.0°/357.0°†	0.27	1.77	0.171	25 (83)

n, number of pastures analyzed (numbers in parentheses give the numbers of cattle analyzed).
*0° = mN.
†0° = power line direction.

Table S3. Body alignment of individual cows as a function of the distance from power lines

Lateral distance to power line	Mean axis μ (0° = mN)	Length of mean vector r	Rayleigh test Z	Rayleigh test P	n
		Distances from E-W power lines			
0–5 m	90.4°/270.4°	0.24	14.15	$<10^{-6}$	240
6–20 m	61.8°/241.8°	0.32	10.52	$<10^{-4}$	100
21–50 m	44.1°/224.1°	0.35	18.68	$<10^{-8}$	152
51–100 m	1.7°/181.7°	0.15	1.32	0.267	62
101–150 m	5.4°/185.4°	0.70	15.77	$<10^{-7}$	32
		Distances from N-S power lines			
0–5 m	171.7°/351.7°	0.04	0.38	0.686	230
6–20 m	179.5°/359.5°	0.12	1.07	0.341	74
21–50 m	174.5°/354.5°	0.23	6.00	0.002	119
51–100 m	169.7°/349.7°	0.44	13.26	$<10^{-5}$	70

mN, magnetic North; *n*, number of cattle analyzed.

Table S4. Magnetic field properties north and south of E-W power lines

	Horizontal Intensity (μT) <H_1; H_2>	Vertical Intensity (μT) <V_1; V_2>	Total Intensity (μT) <T_1; T_2>	Inclination (°) <I_1; I_2>
North				
5 m	<16.05; 31.22>	<53.73; 37.77>	<56.08; 49>	<50.4°; 73.4° >
10 m	<18.33; 28.18>	<52.59; 38.02>	<55.69; 47.32>	<53.5°; 70.8° >
20 m	<20.50; 24.89>	<50.6; 39.5>	<54.59; 46.69>	<57.8°; 69.4° >
50 m	<21.72; 22.5>	<47.47; 42.37>	<52.2; 48>	<62°; 65.4° >
100 m	<21.91; 22.09>	<45.99; 44>	<50.94; 49.15>	<63.3°; 64.5° >
South				
5 m	<16.05; 31.22>	<37.77; 53.73>	<41.04; 62.14>	<67°; 59.8° >
10 m	<18.33; 28.18>	<38.02; 52.59>	<42.20; 59.66>	<64.3°; 61.8° >
20 m	<20.5; 24.89>	<39.5; 50.6>	<44.5; 56.39>	<63.8°; 62.6° >
50 m	<21.72; 22.55>	<42.37; 47.47>	<47.61; 52.55>	<64.6°; 62.9° >
100 m	<21.91; 22.09>	<44; 45.99>	<49.15; 51.02>	<64.3°; 63.5° >

H_1, H_2, V_1, V_2, T_1, and T_2 are vectors of the fields resulting from summation of the AMF and the EMF; the actual field oscillates between H_1 and H_2, V_1 and V_2, and T_1 and T_2, respectively, with a frequency of 50 Hz. All calculations were performed for the AMF vector (B_{AF}) = 15 μT.